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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/739,145	12/19/2003	Takashi Kato	025720-00021	2554

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EXAMINER

KWOK, HELEN C

ART UNIT	PAPER NUMBER
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2856

DATE MAILED: 05/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/739,145

Applicant(s)

KATO ET AL.

Examiner

Helen C. Kwok

Art Unit

2856

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 12/19/03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Priority***

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on 01/31/02. It is noted, however, that applicant has not filed a certified copy of the Japanese application as required by 35 U.S.C. 119(b).

### ***Claim Objections***

2. Claims 1-10 and 14-20 are objected to because of the following informalities. Appropriate correction is required.

In claim 1, line 6, the word "electrode" should be changed to – electrodes – to provide proper antecedent basis.

In claim 3, line 2, the phrase "the relationship" should be changed to – a relationship --.

In claim 4, line 5, the phrase "the other diagonal line" should be changed to – an other diagonal line --.

In claim 5, line 3, the phrase "the other diagonal line" should be changed to – an other diagonal line --.

In claim 8, line 3, the phrase "the longitudinal direction" should be changed to – a longitudinal direction --.

In claim 9, line 3, the phrase "the longitudinal direction" should be changed to – a longitudinal direction --.

In claim 14, line 5, the phrase "the opposite side" should be changed to – an opposite side --.

In claim 15, line 3, the phrase "the opposite side" should be changed to – an opposite side --.

In claim 17, line 2, the phrase "the edges" should be changed to – edges --. In line 3, the phrase "the edges" should be changed to – edges --.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 5-9 and 11-20 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 6,513,382 (Tanaka et al.).

Tanaka et al. discloses an acceleration sensor comprising, as illustrated in Figures 1-14B, a vibrator 2 that is polarized in one direction Ps; a weight 3 that is connected to the vibrator; and a pair of electrodes 21 that are adjacent to each other in the direction of polarization and formed on a first face of the vibrator such that the pair of electrodes being located on a diagonal line on the first face. (See, column 3, line 48 to column 4, line 43).

With regards to claims 5-7, Tanaka et al. further discloses an other pair of electrodes that are located on an other diagonal line on the first face. (As observed in Figure 12A-13A, there are two pairs of electrodes a,b,c,d). Furthermore, the another pair of electrodes (a,d or b,c) each has an area that is smaller than the area of each half of the first face of the vibrator wherein all of the electrodes are connected to each other. (As observed in Figures 12A-13A).

With regards to claims 8-9, Tanaka et al. suggests the polarization direction of the vibrator is perpendicular or parallel to a longitudinal direction of the weight that takes on a plate-like shape. (See, column 6, lines 43 to column 7, line 43).

With regards to claim 11, Tanaka et al. teaches a vibrator polarized in one direction; a weight; and two electrodes that are arranged in a manner as to divide a first face of the vibrator into two asymmetric parts such that the two electrodes having facing edges tilted with respect to the polarization direction of the vibrator. (See, Figure 14A; column 8, lines 43-60).

With regards to claims 12-13, Tanaka et al. further teaches one of the two electrodes lies across all parts of the first face that is divided into four equal parts and that the two electrodes have different areas from each other. (See, Figure 14A).

With regards to claims 14-15 and 18-20, Tanaka et al. suggests a metal film patterned 22 on a second face of the vibrator fixed to the weight 3 with adhesive (i.e. resin). (See, Figure 4A). Furthermore, the first face of the vibrator is attached to a substrate 4 having metal film (i.e. wiring pattern 5) with adhesive (i.e. resin). (See, Figure 4A).

With regards to claims 16-17, Tanaka et al. further suggests the electrodes having corner parts or edges set back from the corners or edges of the vibrator, respectively. (As observed in the figures).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2-4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,513,382 (Tanaka et al.) in view of U.S. Patent 6,578,421 (Ishikawa et al.).

With regards to claims 2-3, Tanaka et al. does not explicitly disclose the specific area arrangement of the electrodes (i.e. area larger than a fourth of the area of the vibrator but smaller than a half of the area of the vibrator) and the relationship between the electrodes and the vibrator to be  $0.5 < L1 (=L2)/L < 1$ . It would have been obvious to an artisan of ordinary skill in the art at the time of invention to have readily recognize the advantages and desirability of designing the electrodes to have an area as specified in the claim with the relationship expression  $0.5 < L1 (=L2)/L < 1$  since Tanaka et al. suggests that different area for the electrodes can be used, for example, figures 5A and 14A. Therefore, using other arrangements or configurations for the electrodes can be

used without departing from the scope of the invention and to have set such characteristics is considered to have been a matter of design choice due to experimentation that would have been obvious without changing and/or altering the operation and/or performance of the device.

With regards to claim 4, Tanaka et al. suggest an exposed region (i.e. groove section 20) of the vibrator that is not covered with electrodes. However, the reference does not explicitly disclose a plurality of exposed regions in the vibrator that are not covered with electrodes. Ishikawa et al. discloses an acceleration sensor comprising, as illustrated in Figures 40A-41D, a plurality of exposed regions in the vibrator that are not covered with electrodes 1a. (See, Figures 41A-41B; column 22, lines 9-45). It would have been obvious to a person of ordinary skill in the art at the time of invention to have readily recognize the advantages and desirability of having a plurality of exposed regions in the vibrator that are not covered with electrodes as taught by Ishikawa et al. in lieu of just an exposed region as in Tanaka et al. to provide a more sufficient bonding strength in other regions so that the transmission loss of energy will be minimized to obtain a better detection performance of the device. (See, column 22, lines 18-33 of Ishikawa et al.).

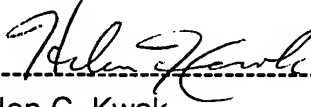
With regards to claim 10, Ishikawa et al. further discloses a differential amplifier 5 connected to the electrodes 1a to output a differential amplifies voltage  $V_{out}$ . (See, Figure 6; column 10, line 54 to column 11, line 5).

**Conclusion**

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helen C. Kwok whose telephone number is (571) 272-2197. The examiner can normally be reached on 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron E. Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
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Helen C. Kwok  
Art Unit 2856

hck  
May 5, 2004